REPRODUCTIVE PERFORMANCE BEING ACHIEVED IN AUSTRALIAN DAIRY HERDS

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ABSTRACT

Reproductive performance was measured and analysed using standard methods in commercial dairy herds, 43 of which were year-round calving and 124 seasonal calving.

Reproductive performance varied widely between herds suggesting that there is considerable scope for improvement in many Australian herds. The data were used to define 'typical' and 'achievable' performance levels but because calculated measures are very sensitive to the methods used, extreme caution is advised when comparing measures from different software programs. While conception rate is related to 100-day in-calf rate, 80-day submission rate was more closely associated. This highlights the need to maximise submission rates to achieve high reproductive performance. It also highlights the importance of selecting appropriate measures of reproductive performance.

Keywords: Bovine, dairy, cows, herds, reproductive performance, fertility

INTRODUCTION

During the research phase of the InCalf Project, comprehensive data from 168 dairy herds was collected and analysed. The project is now moving into a national extension phase. This phase includes the InCalf Fertility Focus reporting system[1]. A previous paper in this proceedings briefly explains some of the measures being used to describe herd reproductive performance as part of InCalf Fertility Focus and the technical basis behind them. This paper describes the reproductive performance in the InCalf Project study herds and discusses the implications of these results.

MATERIALS AND METHODS

The project research phase included a large prospective observational study conducted in commercial dairy herds from four Australian states and focussing on lactating dairy cows. Over 33,000 cows were enrolled in 168 herds from 9 regions (Figure 1).

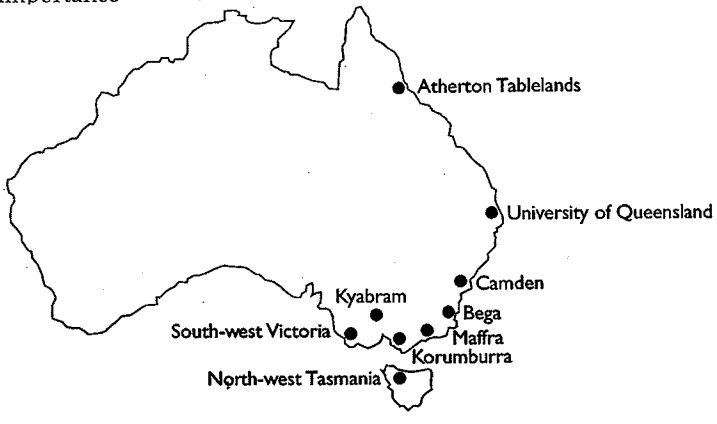

Figure 1. The locations of the InCalf study herds

Veterinarians from 11 veterinary practices helped with herd selection. Within each practice, clients that met the following criteria were identified and the managers of these herds invited to participate. Main selection criteria were:

- anticipated good data recording accuracy by managers and farm employees
- participation in milk recording
- willingness to use the services of a professional inseminator for at least 100 inseminations
- herd size - most study herds were between 120 and 400 cows

Previous reproductive performance was not considered when selecting herds.

Within selected herds, all cows that calved during the study were enrolled. Conception dates were identified using manual rectal pregnancy diagnoses when cows were thought to be between 5 and 16 weeks of pregnancy. Herd data sets were subsequently analysed using the InCalf Fertility Focus algorithms. 'Achievable' herd performance levels were defined separately for year-round and seasonal calving herds, using the 25% of study herds with the highest percentage of cows pregnant by 100 days after calving or 6 weeks after mating start date, respectively. Achievable levels were defined as the median value for each reproductive variable for this group of herds. Associations between 100-day in-calf rate and both 80-day submission rate and first insemination conception rate were graphed with the herd as the unit of analysis.

RESULTS

Descriptive reproductive performance statistics are shown for year-round calving herds in table 1 and for seasonal calving herds in tables 2 and 3. All measures of reproductive performance varied substantially between herds. At the herd-level, both 80-day submission rate and first insemination conception rate were associated with 100-day in-calf rate but 80-day submission rate was more closely associated (Figures 2 and 3).

DISCUSSION

These results demonstrate that reproductive performance varies widely between commercial dairy herds in Australia. This shows that there is considerable scope for improvement in many herds. Many herd managers are very interested in comparing their herd's performance to that in other herds. This is only possible if the same measures are calculated. Because calculated measures are very sensitive to the methods used (see previous paper in this proceedings), extreme caution is advised when comparing measures from different software programs.

Managers often compare herd performance to 'average' performance. However it seems more appropriate to consider achievable performance levels when setting targets. Such targets must be realistic. It may not be possible for any one herd to achieve performance in the top quartile for every measure. The method of setting achievable performance based on the same sub-group of herds for all reproductive performance achievable levels avoids this problem.

While conception rate is related to 100-day in-calf rate, 80-day submission rate was more closely associated. This highlights the need to maximise submission rates to achieve high reproductive performance. It also highlights the importance of selecting appropriate measures of reproductive performance. Some study herds with only modest conception rate achieved high 100-day in-calf rates and vice versa.

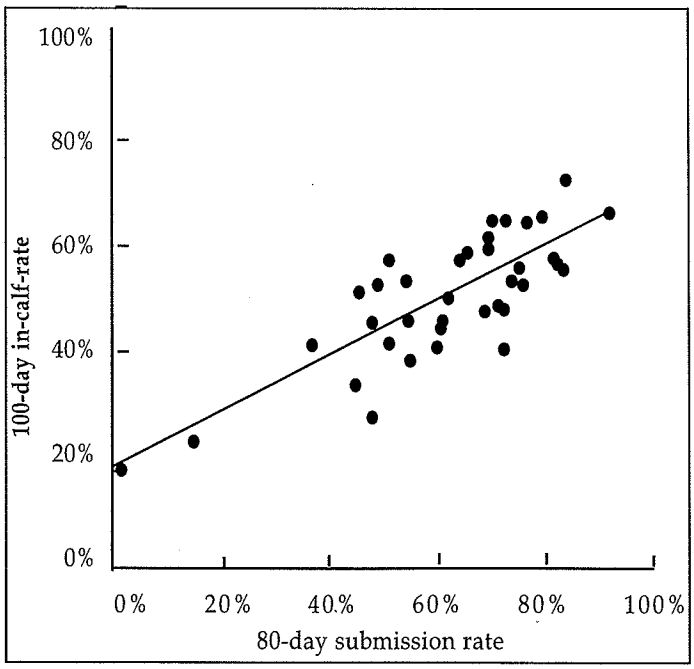

Figure 2. Herd-level association between 80-day submission rate and 100-day in-calf rate in 43 year-round calving herd

Table 1. Reproductive performance in 43 year-round calving Australian dairy herds[1]

Reproductive performance measure	Typical level[2]	Performance of 'top herds'[3]
Primary measures		
100-day in-calf rate	45% (15% - 69%)	58%[3]
200-day not-in-calf rate	19% (8% - 46%)	13%[3]
Secondary measures		
80-day submission rate	61%(1% - 86%)	73%[3]
AI conception rate	43% (20% - 57%)	51%[4]

1 when calculated according to InCalf Fertility Focus specifications
2 Median and range
3 Median of herds in highest quartile on 100-day rate
4 67th percentile of herds in top quartile of herds for 100-day in-calf rate

Table 2. Reproductive performance 124 seasonal calving Australian dairy herds[1]

Reproductive performance measure	Typical level[2]	Performance of 'top herds'[3]
Primary measure		
6-week in-calf rate	60% (23% - 84%)	71%
Secondary measures		
3-week submission rate	75% (27% - 95%)	86%
AI conception rate	49% (24% - 69%)	53%

1 When calculated according to InCalf Fertility Focus specifications
2 Median and range
3 Median of herds in highest quartile on 6-week in-calf rate

Table 3. Expected not in-calf rates by various times since mating start date based on reproductive performance 124 seasonal calving Australian dairy herds[1]

Time since mating start date	Typical level[2]	Performance of 'top herds'[3]
6 weeks	40% (16% - 77%)	29%
9 weeks	28% (7% - 60%)	20%
12 weeks	21% (6% - 48%)	13%
15 weeks	16%	10%
18 weeks	13%	9%
21 weeks	11%	8%

1 When calculated according to InCalf Fertility Focus specifications
2 Median and range; range not calculated for longer than 12 weeks after mating start date as 8 herds had stopped mating by 12 weeks
3 Median of herds in highest quartile on 6-week in-calf rate

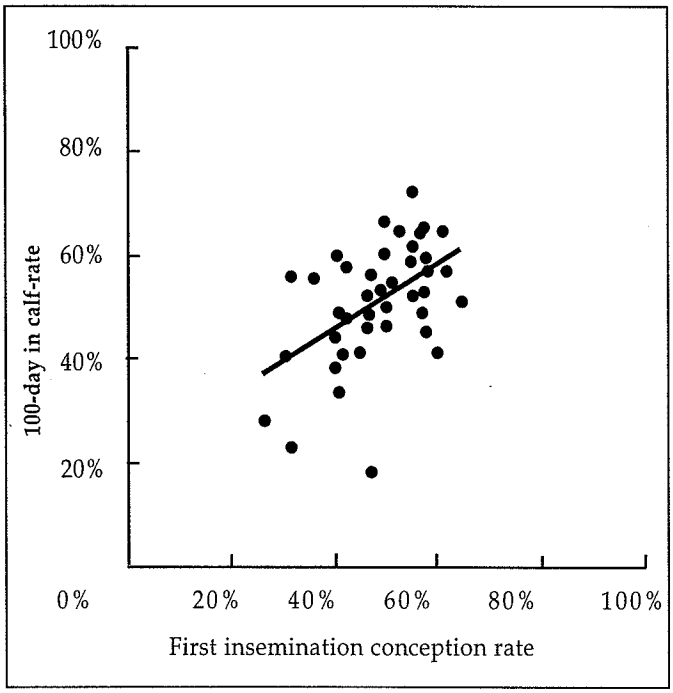

Figure 3. Herd-level association between first insemination conception rate and 100-day in-calf rate in 43 year-round calving herds

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Recommended Reading

InCalf website - www.incalf.com.au

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Effects of high energy diets

EFFECTS OF HIGH ENERGY DIETS ON SCROTAL, TESTICULAR AND SEMEN CHARACTERISTICS IN DORPER RAMS

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ABSTRACT

A study with the aim to evaluate the effects of different dietary energy levels (8.23, 9.77 and 11.32 MJ ME/kg DM) on scrotal, testicular and semen characteristics in young Dorper rams was conducted in 2 phases. During the 1st phase 36, 11-12 month old Dorper rams were randomly allocated to 3 groups of 12 rams each and fed different energy levels for 127 days. Semen was collected fortnightly from every ram to evaluate the semen characteristics. At the end of the trial